Reappearance of Taenia ovis krabbei muscle cysts in a roe deer (Capreolus capreolus) in Denmark after 60+ years, with a possible role of a grey wolf (Canis lupus) as definitive host

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Reappearance of *Taenia ovis krabbei* muscle cysts in a roe deer *(Capreolus capreolus)* in Denmark after 60+ years, with a possible role of a grey wolf (*Canis lupus)* as definitive host

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Abstract:
Taenia ovis krabbei has a semi-sylvatic life cycle with carnivore definitive hosts and cervid intermediate hosts. Cervids become infected by foraging on pasture contaminated with the eggs. Larval stages usually develop in heart and skeletal muscles causing pathological changes and severe illness[1,2]. Meat infected with *T. o. krabbei* entails no zoonotic risk, but for aesthetic reasons the infected meat is usually discarded[3]. Here, we report the reappearance of *T. o. krabbei* in a roe deer in Denmark after more than 60 years. The cysticerci were diagnosed after histology, morphology[4] and sequencing of the *cox1* gene[5]. Shortly after this discovery, a wolf died in a nearby locality, and worms of *T. o. krabbei* were recovered from its intestine. By phylogenetic analysis, the Danish roe deer and wolf isolates were clearly grouped together with other isolates of *T. o. krabbei* from wolves in Finnoscandinavia. In mainland Europe, *T. o. krabbei* is primarily a parasite of wolves[6,7]. The unexpected reappearance of a wolf in Denmark in 2012 after almost two decades of absence could be a mere coincidence, but may also explain the introduction of this parasite along with the wolf. Domestic dogs, on the other hand, could play a role in transmission of *T. o. krabbei* in the area, but this has yet to be tested. Deer infections with *T. o. krabbei* were previously reported in the German county that borders Denmark[3], and may have spread from there. But it is also possible that deer infections were already present, but unnoticed, in other areas of Denmark. The helminth burden of invading animals is normally expected to decrease[8]. However, invading wolves can support their establishment in new areas by carrying worms of *T. o. krabbei* that cause severe illness in native deer that subsequently become prey to the wolves.

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